IN THE SPECIFICATION:

Please revise the specification as follows:

Please amend paragraph number [0017] as follows:

[0017] While a theory of operation is provided, it is to be understood that the invention [[is]] itself is the apparatus of the invention and the method of operation of the invention. The theory of operation is provided solely to make the apparatus and methods of the invention easier to understand.

Please amend paragraph number [0020] as follows:

[0020] For purposes of explaining the theory of operation of the invention, states B and D are the most interesting, because it is in these two states that the motor provides different amounts of torque. Due to the physical characteristics of conventional motors, changes in torque cause corresponding changes in drive current. In other words, the amount of current drawn by the motor from a power supply (e.g., a battery or other power source) varies with the amount of torque provided by the motor. As any roller 112 leaves the pump tubing, as shown in Figure 2B, the tube 114 acts as a spring and pushes the roller. This causes the pump to provide less torque (because less force is needed to turn the rotor 110), and thus the motor uses less current. When any roller 112 re-engages with the tubing, as shown in Figure 2D, re-compressing the tube, the tube acts like a spring being ~~compresses~~ compressed. This action requires the motor to provide additional torque, which causes the motor to draw more current.

Please amend paragraph number [0028] as follows:

[0028] Referring to Figure 5, in an exemplary embodiment the controller 220 includes a central processing unit (CPU) 302, the analog to digital converter 130, an output port 304 for controlling the motor (i.e., for turning it on and off), memory 306 and a user interface 308. The CPU 302 executes procedures stored in the memory 306. The user interface may be as simple as a key pad and a small LCD screen or the like, or may be more robust. The memory typically includes both volatile and non-volatile memory arrays, for storing software

and data. In some embodiments, the memory 306 of the controller includes modules, instructions and data arrays including:

- an operating system 320, or a set of procedures for performing basic system operations such as accessing input/output ports, keeping track of the passage of time, controlling the ADC 130, and the like;
- a smoothing buffer 340 (i.e., a set of memory locations), used to store raw current measurement values received from the ADC 130;
- motor control procedures 322;
- optionally, a calibration procedure 342 for calibrating the pump; and
- optionally, one or more application modules 350, which provide overall control of the pump system in which the controller is used.

Please amend paragraph number [0048] as follows:

[0048] ~~In one embodiment, Y is equal to 1.25.~~ In some embodiments Y is a value between 1.2 and 1.5, inclusive. In one embodiment, Y is equal to 1.25. If the current cycle period value is greater than this amount, the cycle count value is increased by 1 to compensate for a missed pump cycle. However, the instructions for detecting and compensating for a missed pump cycle are not performed if the array 370 has not yet been filled with cycle period values, because the array 370 needs to be filled in order to accurately compute an average cycle period (called the AveragePeriod in the pseudo code of Table 1). Thus, during the first P cycle periods of operation, the controller is unable to detect and compensate for missed cycles. In another embodiment, in order to correct for multiple missed cycles, the correction to the cycle count value is determined by dividing the current cycle period by the average period, and rounding the resulting quotient to an integer value.